

### AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1-51. (Canceled)

52. (Currently Amended) A rotational medical device comprising:

an elongate flexible tubular body having a proximal end and a distal end;

a rotatable element extending through the body;

a rotatable tip at the distal end of the body and connected to the rotatable element~~[[, ]]~~; ~~and the rotatable tip further comprising a radially inwardly extending annular recess; and~~

the tubular body comprising a plurality of radially inwardly extending retaining members for rotatably engaging the annular recess.

53. (Canceled)

54. (Currently Amended) A rotational medical device comprising an elongate flexible tubular body having a proximal end and a distal end, a manifold for connecting a vacuum source being coupled to said proximal end of said elongate flexible tubular body, a rotatable an elongate element extending through said elongate flexible tubular body, a rotatable tip being connected to said rotatable elongate element at said distal end of said elongate flexible tubular body, said rotatable tip having a proximal end, a distal end and a rotational axis extending through said proximal end and said distal end; said rotatable tip comprising a plurality of cutting surfaces that provide a plurality of cutting profiles, the rotatable tip further being rotatable about said rotational axis relative to said elongate flexible tubular body, and a control being disposed at said proximal end of said elongate flexible tubular body.

55. (Currently Amended) The device of Claim 54, further comprising a guidewire lumen extending through said ~~rotatable elongate~~ element.

56. (Previously Presented) The device of Claim 55, wherein said guidewire lumen also extends through said rotatable tip.

57. (Currently Amended) The device of Claim 54, further comprising an indicator that is in electrical communication with said control, said indicator being adapted to indicate resistance to rotation of either said ~~rotatable elongate~~ element or said rotatable tip.

58. **(Previously Presented)** The device of Claim 54, wherein said control is mounted on a handle that is sized and configured for single hand operation of said rotatable tip and application of said vacuum source through said device.

59. **(Currently Amended)** The device of Claim 54, further comprising an axially extending annular space being defined between said elongated flexible tubular body and said rotatable elongate element.

60. **(Previously Presented)** The device of Claim 59, wherein said annular space defines at least a portion of an aspiration lumen.

61. **(Previously Presented)** The device of Claim 60, wherein said elongated flexible tubular body has a first cross sectional area and said annular space has a second cross sectional area such that said second cross sectional area is at least about 35% of said first cross sectional area.

62. **(Previously Presented)** The device of Claim 54, wherein said rotatable tip comprises a helical thread.

63. **(Previously Presented)** The device of Claim 62, wherein said rotatable tip further comprises at least one radially outward extending cutter positioned on said proximal end of said rotatable tip.

64. **(Currently Amended)** A rotational medical device comprising an elongate flexible tubular body having a proximal end and a distal end, a housing being secured to said distal end ~~[[or]]~~ of said elongate flexible tubular body, a manifold for connecting a vacuum source being coupled to said proximal end of said elongate flexible tubular body, a rotatable an elongate element extending through said elongate flexible tubular body, a rotatable tip being connected to a distal end of said rotatable elongate element and being disposed at least partially within axially moveable relative to said housing, said rotatable tip having a proximal end, a distal end and a rotational axis extending through said proximal end and said distal end; and said rotatable tip being rotatable about said rotational axis relative to said elongate flexible tubular body.

65. **(Previously Presented)** The device of Claim 64, wherein said rotatable tip is captured within said housing.

66. **(Previously Presented)** The device of Claim 65, wherein said housing comprises two pieces that enclose said rotatable tip.

67. **(Currently Amended)** The device of Claim 64, further comprising a guidewire lumen extending through said ~~rotatable~~ elongate element.

68. **(Previously Presented)** The device of Claim 67, wherein said guidewire lumen also extends through said rotatable tip.

69. **(Currently Amended)** The device of Claim 64, further comprising a control that is adapted to control rotation of said ~~rotatable~~ elongate element or said rotatable tip and an indicator that is in electrical communication with said control, said indicator being adapted to indicate resistance to rotation of either said ~~rotatable~~ elongate element or said rotatable tip.

70. **(Previously Presented)** The device of Claim 64, wherein a control is mounted on a handle that is sized and configured for single hand operation of said rotatable tip and application of said vacuum source through said device.

71. **(Currently Amended)** The device of Claim 64, further comprising an axially extending annular space being defined between said elongated flexible tubular body and said ~~rotatable~~ elongate element.

72. **(Previously Presented)** The device of Claim 71, wherein said annular space defines at least a portion of an aspiration lumen.

73. **(Previously Presented)** The device of Claim 72, wherein said elongated flexible tubular body has a first cross sectional area and said annular space has a second cross sectional area such that said second cross sectional area is at least about 35% of said first cross sectional area.

74. **(Previously Presented)** The device of Claim 64, wherein said rotatable tip comprises a helical thread.

75. **(Previously Presented)** The device of Claim 74, wherein said rotatable tip further comprises at least one radially outward extending cutter positioned on said proximal end of said rotatable tip.

76. **(Previously Presented)** The device of Claim 64, wherein the rotatable tip is at least partially serrated.

77. **(New)** The device of Claim 54, wherein the plurality of cutting surfaces comprises a proximal cutting surface and a distal cutting surface.

**Appl. No.** : **10/688,603**  
**Filed** : **October 17, 2003**

78. (New) The device of Claim 77, wherein the proximal cutting surface and the distal cutting surface comprise different diameters.

79. (New) The device of Claim 78, wherein the diameter of the distal cutting surface is greater than the diameter of the proximal cutting surface.

80. (New) A rotational medical device, comprising:

an elongate flexible tubular body, having a proximal end and a distal end;

a rotatable element extending through the body having a rotatable cutter at a distal end thereof;

a control on the proximal end of the body; and

at least one stationary cutting member on the tubular body;

wherein a portion of the rotatable cutter is configured to cooperate with the stationary cutting member to cut material drawn into the tubular body, said cooperation between the stationary cutting member and the rotatable being the primary cutting mechanism.

81. (New) The rotational medical device of Claim 80, comprising two stationary cutting members on the tubular body.

82. (New) The rotational medical device of Claim 80, wherein the rotatable cutter comprises a rotatable tip connected to the rotatable element.

83. (New) The rotational medical device of Claim 80, wherein the rotatable cutter is at least partially recessed within the tubular body.

84. (New) The rotational medical device of Claim 80, wherein the rotatable cutter is substantially recessed within the tubular body.

85. (New) The rotational medical device of Claim 80, wherein the rotatable cutter is entirely recessed within the tubular body

86. (New) The rotational medical device of Claim 80, wherein the rotatable element comprises a torque tube.

87. (New) The rotational medical device of Claim 80, wherein the torque tube comprises a layer of braided wire.

88. (New) The rotational medical device of Claim 80, wherein the torque tube comprises a layer of coiled wire.

89. (New) The rotational medical device of Claim 88, wherein the coiled wire comprises metal.

90. (New) The rotational medical device of Claim 88, wherein the coiled wire comprises a polymer.

91. (New) The rotational medical device of Claim 80, further comprising a central guidewire lumen extending throughout the length of the rotational medical device.

92. (New) The rotational medical device of Claim 80, further comprising a monorail guidewire lumen extending throughout the length of the rotational medical device.

93. (New) The rotational medical device of Claim 82, wherein the rotatable tip further comprises a radially inwardly extending annular recess.

94. (New) A rotational medical device, comprising:

an elongate flexible tubular body, having a proximal end and a distal end;

a rotatable element extending through the body and having a rotatable cutter at a distal end thereof;

a housing at the distal end of the body; and

at least one stationary cutting member;

wherein a portion of the rotatable cutter is configured to cooperate with the stationary cutting member to cut material drawn into the tubular body, said cooperation between the rotatable cutter and the stationary cutting member being the primary mechanism for cutting.

95. (New) The rotational medical device of Claim 94, wherein the housing is separately formed and secured to the distal end of the body.

96. (New) The rotational medical device of Claim 94, wherein the rotatable cutter is at least partially recessed within the tubular body.

97. (New) The rotational medical device of Claim 94, wherein the rotatable cutter is substantially recessed within the tubular body.

98. (New) The rotational medical device of Claim 94, wherein the rotatable cutter is entirely recessed within the tubular body

99. (New) A rotational medical device, comprising:

an elongate flexible tubular body, having a proximal end and a distal end;

a rotatable element within the body;

a control on the proximal end of the body;

first means for cutting material drawn into the tubular body, the first means being on the tubular body; and

second means for cutting material drawn into the tubular body, the second means being on the rotatable element and cooperating with the first means to cut the material.

100. (New) The rotational medical catheter of Claim 99, wherein the first means for cutting material drawn into the tubular body comprises a stationary cutting member.

101. (New) The rotational medical catheter of Claim 99, wherein the first means for cutting material drawn into the tubular body comprises a lip of a cutter housing.

102. (New) The rotational medical catheter of Claim 99, wherein the second means for cutting material drawn into the tubular body comprises a cutting edge.

103. (New) The rotational medical catheter of Claim 99, wherein the second means for cutting material drawn into the tubular body comprises a cutting edge of a screw thread.

104. (New) The rotational medical catheter of Claim 99, wherein the second means for cutting material drawn into the tubular body comprises a flange.

105. (New) The rotational medical catheter of Claim 99, wherein the second means for cutting material drawn into the tubular body comprises a cutting flange.